

TO:

Pat Regan - Regional Engineer
Office of Energy Projects - FERC
Division of Dam Safety and Inspection
Portland Regional Office
101 Southwest Main Street - Suite 905
Portland, Oregon 97204

SUBJECT:

July Monthly Report for the Falls Creek Hydro-electric Project
FERC # P-11659

Dear Mr. Regan,

Please find enclosed the Monthly Construction Report for the Falls Creek Hydroelectric Project, FERC # P-11659.

Gustavus Electric Company, as the licensee for the above project, submits this report.

Sincerely,

Richard Levitt

FALLS CREEK HYDROELECTRIC-PROJECT (P-11659)
MONTHLY CONSTRUCTION REPORT TO FERC
July 2006

1) Progress of Work

The month of July was devoted entirely to road construction. Additional work which supported road construction included development of pit #4, pit #5, additional blasting at pit #3, the development of spoils areas at the strip-fen Y and the clearcut, and construction of a staging area on the bluff overlooking the powerhouse (Figure 1).

2) Status of Construction

Pit # 3 was shot for the third time on July 1, producing 15,000 cu. yd. of shot rock. This rock was immediately used to build road from the strip fen Y toward the powerhouse site. Construction of this section of road went quickly - approximately 3,500 feet of road constructed in one week. This brought the road to the clearcut area, running from access road station 60+00 to station 95+00.

When the road reached the clearcut, construction continued as planned, using a road switchback down the steep section of the clearcut area. However, after 300 feet of road was built, the plan

was altered to follow a more direct route and use a large cut and fill to keep to a maximum 16% grade. This will allow the road and pipeline to follow the same route, as opposed to separate routes outlined in the original plan. The area between the original road alignment constructed and the current alignment has been developed as a gravel source (pit #5). The material in pit #5 is being used to top the shot-rock road and has already greatly reduced the frequency of flat tires.

After completing the large cut and fill in the clearcut area, road construction continued toward the powerhouse. The road reached the bluff overlooking the powerhouse, adjacent the lower falls, on July 30.

Road construction toward the intake site also began on July 1. After



Large fill across steep section in the clearcut area.



Pit #5 - Gravel source at the clearcut. Road/penstock alignment in back of photo.

approximately 250' an area that requires a 20-40' bench cut was encountered ("blueberry hill" - see Figure 1). To begin, a 100' stretch was stripped to bedrock in preparation for drilling and blasting. This area was shot on July 19th and resulted in 5,200 cu. yds. of shot rock (pit #4).



Blueberry hill - Pit #4 drilled and ready for the first shot. Note intact bank at left.

After the July 19 shot, an additional 450' of roadway cut was stripped and hauled to the spoils area near the strip fen Y in preparation for additional drilling and a blast scheduled for sometime in August.

3) Construction Difficulties

As with April and May, July has been another wet month. Precipitation has been almost 3 times the monthly average.

Initial cut/fill and stripping of the blueberry hill road cut resulted in a mass wasting event that raised concerns for protecting fish habitat in Falls creek. In consultation with the ECM, it was decided that no additional cut and fill work would take place on



Slide just below pit #4. Falls Creek canyon is ~ 50' beyond terminus.

the approach to the blueberry hill road cut and a spoils area was selected just south of the strip fen Y that does not drain to the Falls Creek watershed and poses no threat to fish habitat. To lessen the chance of additional slides toward Falls creek, the road route was moved up-slope and developed as a trench cut rather than a bench cut. This left the slope on the canyon wall largely undisturbed. The July 19 shot resulted in no-mass wasting. See the attached Record of Concern (appendix 2) for more details.

The blueberry hill rock cut has resulted in more waste material than we had initially predicted. The material is a mixture of peaty soils, Mount Edgecumbe ash and lodgement till - all of which acts as a very dense liquid when disturbed and wetted. As a consequence, the spoils area is spreading downhill and impacting a greater surface area than we had planned.

The undulating bedrock has made for difficult traversing with the drill rig and has necessitated pumping of pooling water from the low spots.

5) Critical Events and Dates

Pit #4 was shot on July 19th as part of intake site access road construction. Additional stripping/backhauling

and drilling of the area began again immediately after the July 19 shot.

The powerhouse access road reached the top of the clearcut on July 9. A gravel source was developed in the area on July 10. Road construction continued through the area and reached the bottom of the clearcut on July 22, and the bluff above the powerhouse site on July 30.

8) Sources of Major Construction Material

Rock from pit #3 was used for construction of the road from the strip fen Y to the clearcut. Rock from pit #4 was used for road construction from the clearcut to the powerhouse site area. Gravel from pit #5 has been used for road topping throughout the project area.

11) Photographs

Ten photo vantage points have been established throughout the project area. See Figure 1 for photo site locations and Appendix 1 for this month's photos.

12) Erosion Control and Other Environmental Measures

Although rain fall was considerably above normal during the month of July, existing control measures were adequate for all "normal" erosion and sediment issues associated with project construction.

A mass wasting event occurred as a consequence of stripping pit #4. The forested slope immediately below the area being stripped for blasting of the roadway alignment gave way and slid toward the Falls Creek canyon. The total area of this slide was approximately 15000 ft² and has settled with a terminus approximately 50 feet from the edge of the Falls Creek canyon. Though the material has drained some since the event it appears to be collecting and holding enough water to remain fairly soft and may continue to ooze toward the edge of the canyon. When the construction superintendent was asked about "shoring-up" the slide he advised against moving equipment into the area because the area is too unstable to support the weight of heavy machinery. During heavier rains the slide erodes and contributes sediment to the Falls Creek directly below the terminus. The total effect on measured turbidity has been nominal thus far. If the area should begin to contribute larger amounts of sediment to the stream it may be possible to create settling ponds with hand tools between the terminus of the slide and the canyon lip. Revegetation through hydro-seeding or other means is advised as soon as possible.



Looking up hill from mass wasting slide below pit #4.

The slide described above generated considerable concern for slope stability in the vicinity of the blueberry hill blasting area (pit #4). Although the project manager and construction superintendent immediately altered construction and blasting plans to account for a heightened awareness of slope instability, the ECM felt it

necessary to report specific concerns in writing, and ask for a response in writing, prior to blasting of pit #4 (see appendix 2). The protocol developed (Record of Concern/Record of Response) will be used for future situations that necessitate timely documentation of the deliberative process engaged between the ECM, project manager and construction superintendent.

Consultation between the construction superintendent and the ECM resulted in the selection of the 4th major spoils area just south of the Strip Fen Y (see Figure 1). This area was selected in order to minimize impacts to rare wetland types, provide a slope for efficient backhauling and avoid sedimentation into the Falls Creek watershed. Deposition in this area has resulted in mass wasting as the terminal lobe lurches downhill after loading. Backhaul materials associated with construction of the intake site access road will be dumped here.



Spoils area near the Strip Fen Y. Site is currently 2 acres.

Consultation between the construction superintendent and the ECM resulted in the selection of the 5th major spoils area just south of the large fill through the clearcut. This area was selected in order to minimize impacts to important forest types (including marbled murrelet habitat) and provide a slope for efficient backhauling. The risk of sedimentation into the Falls Creek watershed is low. Backhaul materials associated with construction of the powerhouse site will be dumped here.

Two trees that were marked as potential marbled murrelet habitat were filled over during road construction activities in the upper elevations of the clearcut. It may have been possible to avoid injury to these trees if consultation with the ECM occurred prior to the event. After consultation with FERC representatives, a non-conformance report was issued to the project manager. Please see attached non-conformance report for additional details.

Monitoring of turbidity in Falls Creek has been ongoing through the month of July. A peak of 12.2 NTUs was recorded on July 26. The peak recording happened after a few days of heavy rains and was associated with natural increases in stream turbidity. Typical turbidity readings range from 1-3 NTUs.

Topsoil is being stored at pit #2 for future revegetation work.

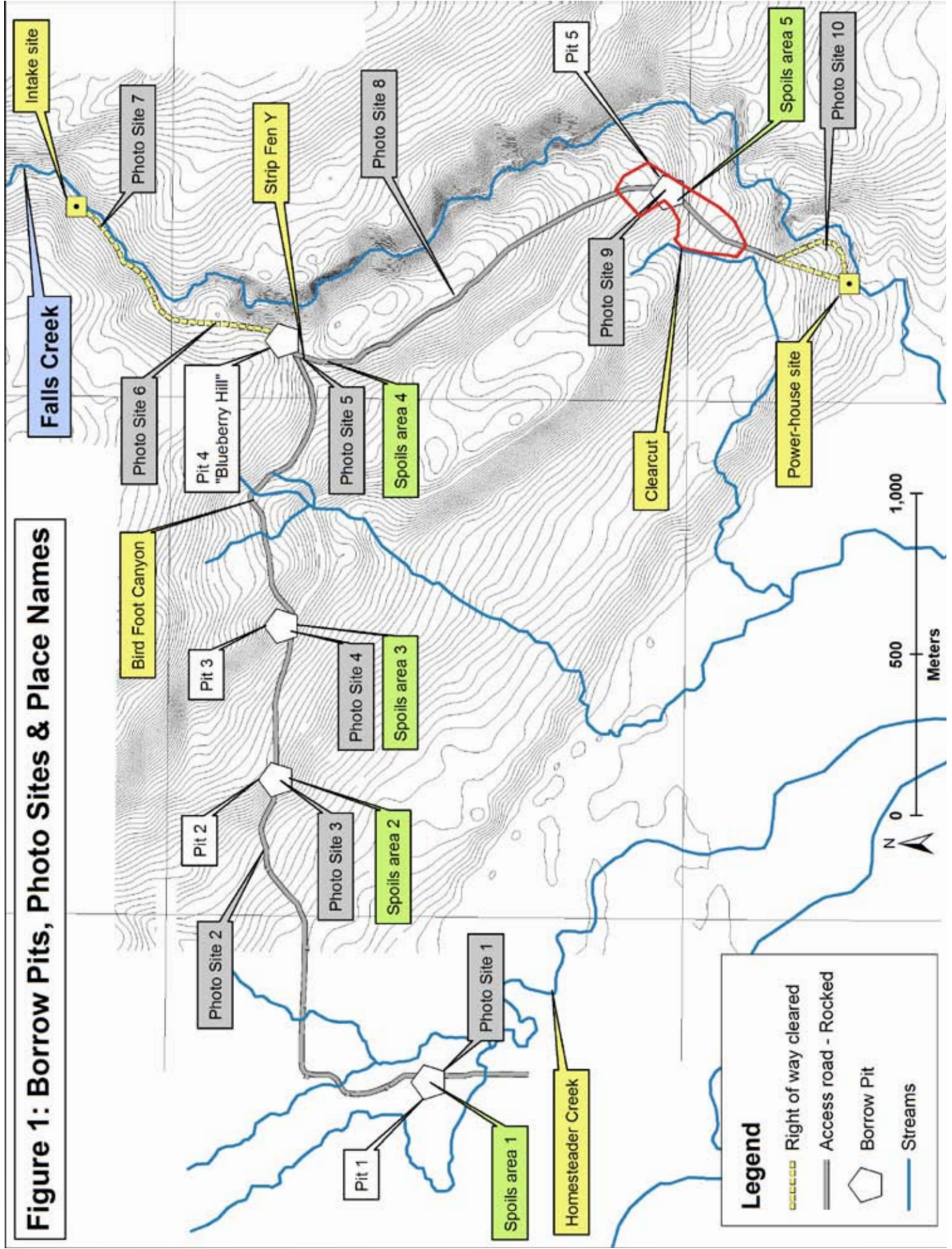
13) Other Items of Interest

Moose traffic decreased this month. Bear traffic increased this month, especially near the anadromous reach. Just a few salmon were noted during foot counts in July. Goshawks were observed on 3 separate occasions - twice in the clearcut and once at pit #2. The gravel source in the clearcut appears to be alluvial in derivation and bedding planes suggest deposition at a time when sea level was near this elevation (~ 350' above existing sea level).

The following sections are not yet applicable to the date of this report:

- | | |
|-----------------------------|---|
| 4) <u>Contract Status</u> | 7) <u>Foundations</u> |
| 6) <u>Reservoir Filling</u> | 9) <u>Materials Testing and Results</u> |
| | 10) <u>Instrumentation</u> |

Figure 1: Borrow Pits, Photo Sites & Place Names



APPENDIX 1: JUNE PHOTOS FROM VANTAGE POINTS



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Appendix 2: Record of Concern/Record of Response

Record of Concern

To: Richard Levitt
Hydro Project Manager

From: Bob Christensen
Hydro ECM

This record is being drafted to document concern for environmental impacts associated with construction activities on the Falls Creek Hydro-electric project.

The specific concern is for the possibility of mass wasting into Falls Creek as a consequence of developing Pit #4 (figures 1,2). Pit #4, though used in the field, is misleading nomenclature - although the cut will provide a rock source for construction activities the purpose of the cut is to bring the penstock road alignment down to the necessary grade.

Initial removal of overburden in this area resulted in a slide of approximately 15,000 square feet (figures 3,4,5). This slide is poised approximately 50 feet from the Falls Creek canyon lip and may continue to move over the edge of the canyon or otherwise provide a source of sedimentation/increased turbidity in Falls Creek during heavy rains.

In addition, the slide event is likely a good indicator of slope instability in the vicinity of "pit #4" and the Falls Creek canyon slopes in general. Slope instability in the Falls Creek canyon was noted as a primary concern in the geological report prepared by Dan Mann (see appendix 1).

The slope immediately below pit #4 ranges from approximately 60-80%. Geotechnical work has not been done for the pit area or slope immediately below the pit so the depth of overburden and bedrock characteristics are largely unknown. Clearing and blasting of pit #4 may result in a large mass wasting event that would negatively impact fish habitat in Falls Creek.

Date:

Date:

Signature

Signature

Record of Response

To: Bob Christensen
Hydro Project ECM

From: Richard Levitt
Hydro Project Manager

Gustavus Electric Company is well aware of the potential of mass wasting in the Falls Creek watershed. It is well documented in the DEA prepared for the hydro-license application as the number one ecological threat posed by this project. Pit #4 is not being developed as a material source, but rather as the only possible road and penstock route. A cut of 40 feet is necessary to prevent sag vertical curves along the route. This site would never have been developed just as a material source. It could more properly be called cut #1 in the penstock road alignment.

We are doing everything we can to minimize the possibility of mass wasting in this area. The alignment of the road has been moved away from the canyon wall and a trench cut will be used rather than a bench cut - Thus minimizing the disturbance to the slope. After the slide event of last week no more overburden is being deposited on slopes leading to the falls creek canyon.

There is no choice but to drill and shoot the rock, which needs to be removed for this road cut. Ripping is not possible. The blasting plan, timing and strength of the charges, will be key in minimizing shock waves and to avoid deposition of shot rock on the existing slide. A blasting plan prepared by Steve Manchester and Harlan Heaton is to be a part of this response.

Date:

Date:

Signature

Signature

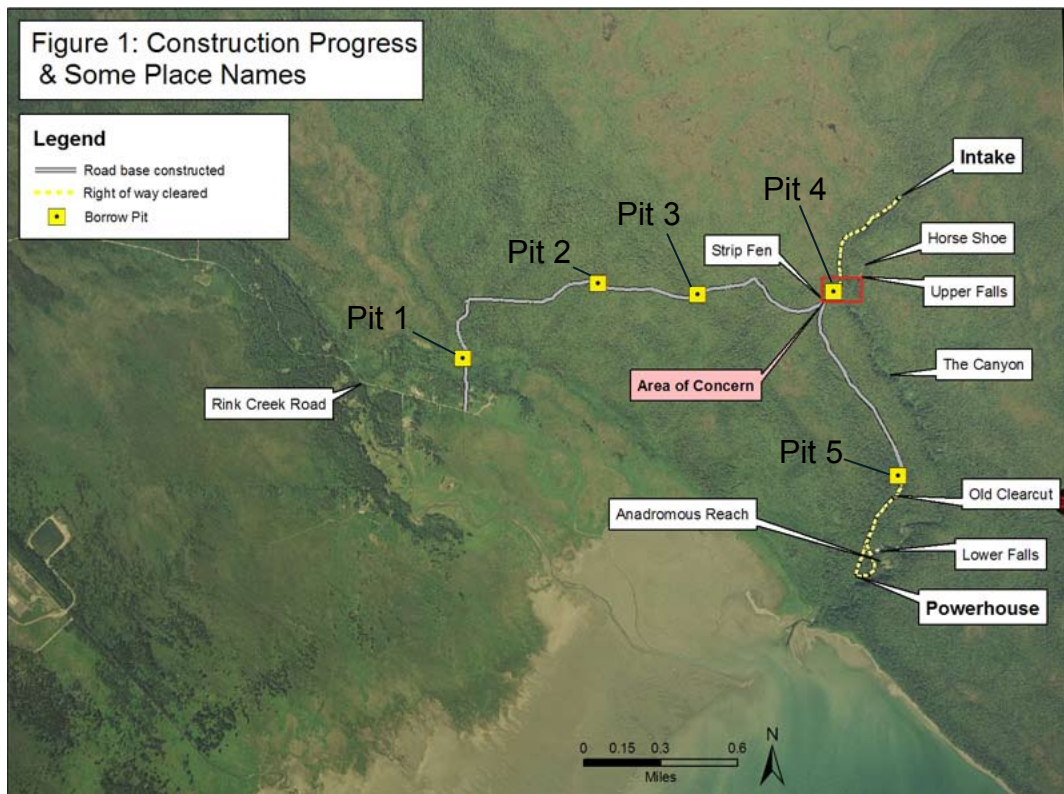


Figure 1: Construction Progress and relevant place names.

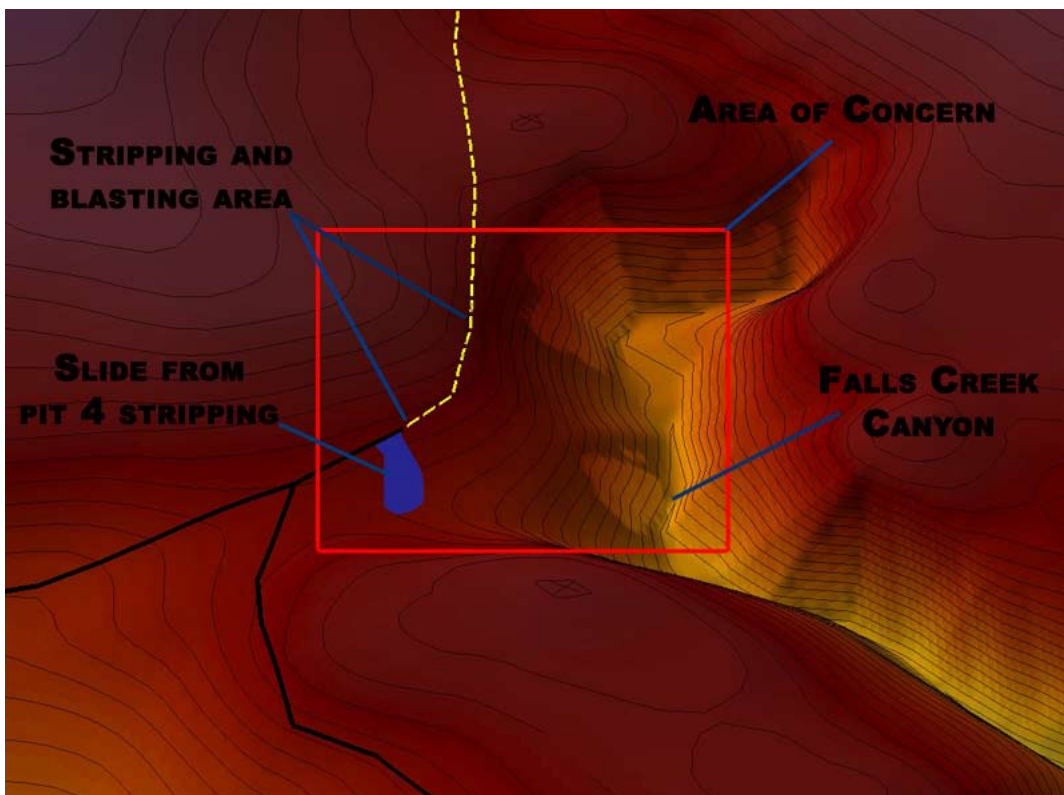


Figure 2: 3 D model of concern area.



Figure 3: Slide below pit 4/road penstock-of-way stripping and drilling area. Toe of slide is approximately 50' from canyon lip.



Figure 4: Looking southwest from pit 4. Steep slope is just behind photo location. Slide area off to left.



Figure 5: Looking at the profile of the 20' berm left on the downslope slide of the blasting area. Mix of clay, gravel and dirt.

FALLS CREEK HYDROELECTRIC PROJECT NON-CONFORMANCE REPORT

NUMBER: 1

DESCRIPTION OF NONCONFORMANCE:

Marked marbled murrelet habitat trees were buried by road fill without contacting the ECM to discuss the need for such action or alternatives to harming the habitat trees. Approximate depth of fill was ten feet.

DATE: 7/12/2006

BY: Bob Christensen - Project ECM

SUMMARY OF DIRECTIVES:

The construction superintendent and project manager have been directed to do no harm to potential marbled murrelet trees without prior consultation with the ECM. These trees are marked with blue ribbon by the ECM if they exist in close proximity to construction activities. It should be noted however that not all potential habitat trees are marked as it is not always clear which are in immediate danger of harm from construction activities. The project manager and construction superintendent have been made aware that habitat trees can be generally identified as larger individuals (greater than 32" dbh) with branches of approximately 3.5 inches in diameter or larger and that harm can result from cutting, root damage, burial, bark scarring, etc.

DATE: 7/12/2006

BY: Bob Christensen - Project ECM

DESCRIPTION OF FOLLOW-UP ACTION:

After notifying the project manager of the tree burials he immediately brought the matter to the attention of the construction superintendent. The construction superintendent said he did not know that filling around the base of the tree would result in harm.

DATE: 7/13/2006

BY: Bob Christensen - Project ECM

STATEMENT OF RESOLUTION:

No additional harm will be done to standing trees that may provide nesting/roosting habitat to marbled murrelets without consulting with the ECM beforehand. Trees that have been filled over by road construction activities will be excavated in an effort to increase the likelihood of survival.

DATE: 7/16/2006

BY: Richard Levitt - Project Manager

